SAE Aerospace
An SAE International Group

METRIC AEROSPACE STANDARD

SAE MA4811

Issued 1994-11
Reaffirmed 2012-12

Insert - Thin Wall, Self-Locking, Metric Short and Long Length Installation and Removal Of

RATIONALE

MA4811 has been reaffirmed to comply with the SAE five-year review policy.

1. SCOPE:

1.1 This SAE Metric Aerospace Standard (MA) provides minimum design, installation, and removal requirements for MA3520 and MA3521 thin wall inserts and is applicable when specified on engineering drawings or in procurement documents.

2. APPLICABLE DOCUMENTS:

The following publications form a part of this specification to the extent specified herein. The latest issue of SAE publications shall apply. The applicable issue of other publications shall be the issue in effect on the date of the purchase order. In the event of conflict between the text of this specification and references cited herein, the text of this specification takes precedence. Nothing in this specification, however, supersedes applicable laws and regulations unless a specific exemption has been obtained.

2.1 SAE Publications:

Available from SAE, 400 Commonwealth Drive, Warrendale, PA 15096-0001.

MA3520	Insert - Thin Wall, Short, Self-Locking, 550 °C, Silver Plated, UNS N07718, MJ Thread, Metric
MA3521	Insert - Thin Wall, Long, Self-Locking, 550 °C, Silver Plated, UNS N07718, MJ Thread, Metric
MA4812	Insert - Thin Wall, Metric, Short and Long, Hole Preparation For

3. GENERAL DESIGN INFORMATION:

3.1 These self-locking inserts shall have knurled areas indented into parent material to prevent rotational movement during service and while assembling or removing the mating bolt.

TO PLACE A DOCUMENT ORDER: **Tel: 877-606-7323 (inside USA and Canada)**
Tel: +1 724-776-4970 (outside USA)
Fax: 724-776-0790
Email: CustomerService@sae.org
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SAE values your input. To provide feedback on this Technical Report, please visit
http://www.sae.org/technical/standards/MA4811

3.2 The MA3520 short insert series are primarily designed for use in hard materials (e.g., steels, nickel, titanium, etc.) and the MA3521 long insert series are primarily designed for use in soft light alloy materials (e.g., aluminum, magnesium, etc.).

3.3 The MA3520 and MA3521 inserts are to be installed per this document into holes prepared per MA4812.

3.4 The dimensions are in millimeters.

4. DESIGN REQUIREMENTS:

4.1 Minimum data to be specified on engineering drawing or specification.

4.1.1 Boss diameter to be at least the minimum specified in MA4812.

4.1.2 Location of holes and thread sizes. If tap drill depth is not through, specify control depth dimension.

4.1.3 Applicable insert part number per MA3520 or MA3521.

4.1.4 If application requires a corrosion protective coating, so specify.

4.1.5 Install insert per MA4811.

4.1.6 Inserts require special tooling for proper installation. Tooling may be obtained from insert supplier.

5. INSTALLATION OF INSERT:

5.1 Apply a corrosion protective coating in the prepared hole, if applicable (see 4.1.4).

5.2 Engage the drive wrench into insert and wrench insert into the hole to 0.40 to 0.65 depth as shown in Figure 1.

5.3 Position the swage tool into insert and apply a downward force sufficient to bottom the nylon stop against the parent material as shown in Figure 2. The insert should now be correctly swaged and locked.

CAUTION:

a. When a serrated counterbore is used, care must be taken that the knurls around the insert line up with the counterbore serrations.
b. When swaging, ensure structure is sufficiently supported.

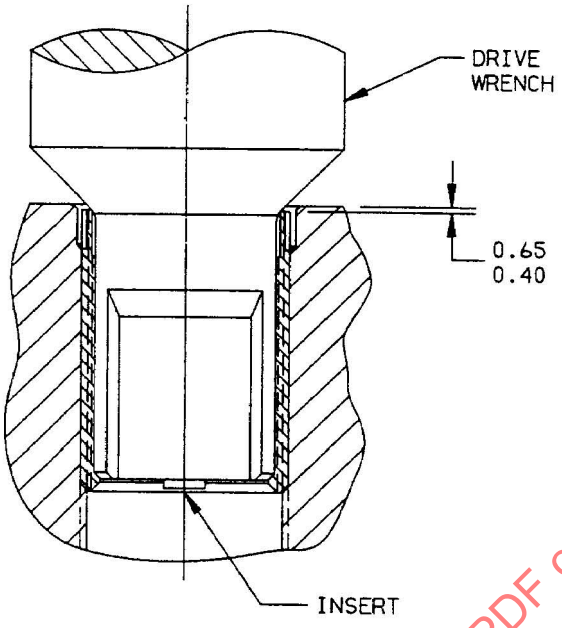

FIGURE 1

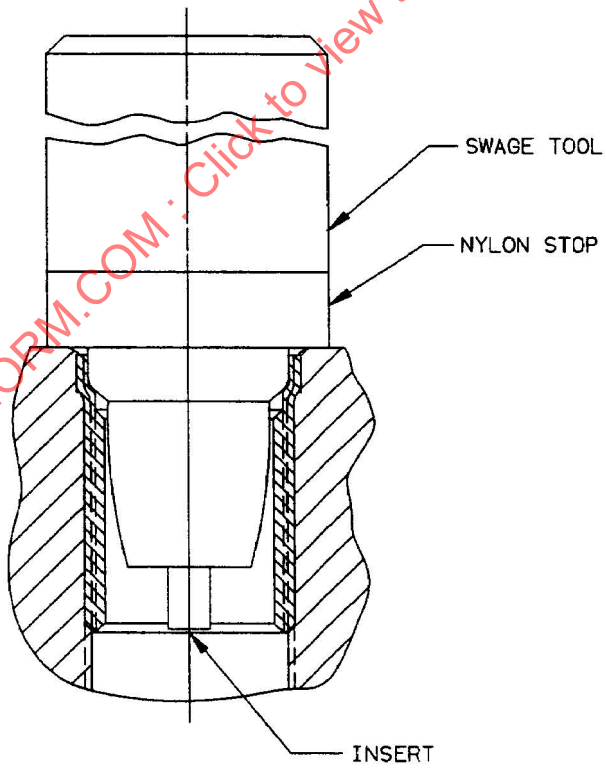

FIGURE 2

6. INSPECTION AND GAGING:

6.1 After-Swage Inspection:

After the insert has been swaged and the nylon stop washer has contacted the parent material surface, the swaged insert shall conform to the dimensional requirements of Figure 3 and Table1.

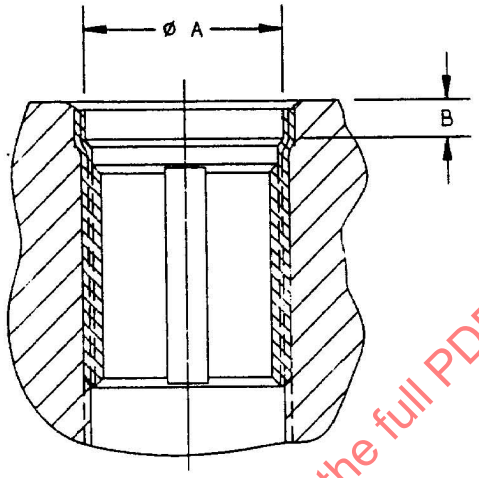

FIGURE 3

TABLE 1

Insert Part Number Short	Insert Part Number Long	ϕA Min	B Min
MA3520-01	MA3521-01	5.860	2.08
MA3520-02	MA3521-02	6.875	2.28
MA3520-03	MA3521-03	7.890	2.48
MA3520-04	MA3521-04	8.905	2.88
MA3520-05	MA3521-05	10.965	3.58

6.2 After-Swage Gaging (Recommended Method):

After the insert has been swaged, use the gage per Figure 6. Insert the "Go" end ("G") of the gage into the counterbore of the insert. The shoulder of the gage must rest flush with the face of the parent material, this indicates that the insert has been successfully swaged, otherwise, the installation is not acceptable (see Figure 4). Now insert the "No Go" ("N") end of the gage into the counterbore. The shoulder must now be clear of the parent material surface to indicate the insert has not been driven too deep. Otherwise, the installation is not acceptable (see Figure 5).

When both "Go" and "No Go" conditions are acceptable, the installation is correct and the insert is ready for use. If not, proceed to 6.5.

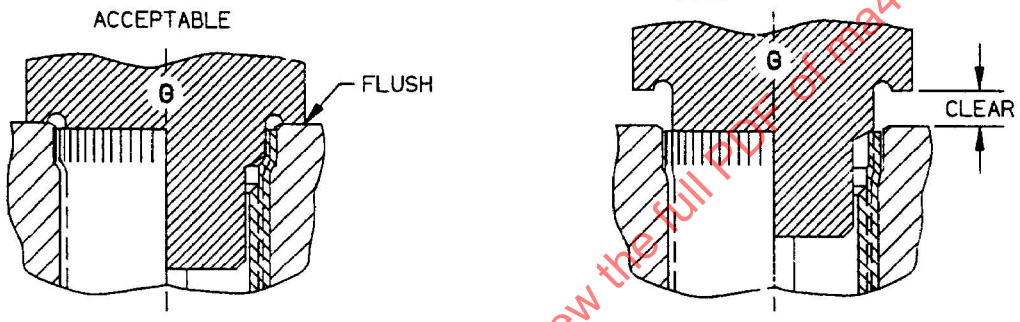

FIGURE 4

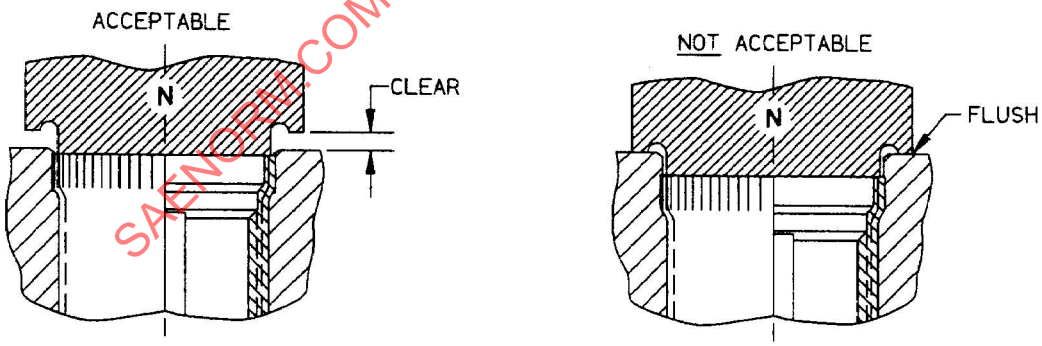

FIGURE 5